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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,171	09/28/2001	Katsuyuki Yamada	65988 CCD	5507

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EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/966,171	YAMADA ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/5/2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10,12-14,17-25 and 27-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10,12-14,17-25 and 27-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4,6-8,10,12,14,33 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinari et al. '913, in view of Ando et al. '543 and Hisotomi et al. WO 99/38168.

Yoshinari et al. '913 in example 1 teaches a 0.6 mm (DVD) substrate with a track pitch of 1.2 microns, a groove depths of 65 nm and width of 0.6 microns, overcoated with 170 nm of $ZnS\text{-}SiO_2$, 2 nm of Cr_2O_3, a $Ge_2Sb_2Te_5$ recording layer, 2 nm of Cr_2O_3, 20 nm of $ZnS\text{-}SiO_2$ and 200 nm of Al- 1.7%Cr reflective layer and the UV recording layer, which is used with a 634 nm laser and a relative linear velocity of 8.2 m/s. (12/55-14/7). The maximum linear velocity is preferred to be between 6.8 and 15 m/s (10/7-17).

Ando et al. '543 disclose GeTeSb phase change optical recording media (RAM) (8/53-58). The lead-in area is disclosed as containing embossed information including linear velocity upon recording and erasure. (10/60-64)

Hisotomi et al. WO 99/38168 disclose GeTeSb phase change optical recording media (RAM) (page 6). The lead-in area is disclosed as containing embossed information including linear velocity upon recording and erasure. (paragraph bridging pages 7-8)

It would have been obvious to modify the cited example of Yoshinari et al. '913 by including the various performance characteristics, such a optimum or uppermost recroding velocities in the lead in area of the optical disc so that the disc is used under improper conditions as discussed by described Ando et al. '543 in column 8 and Hisotomi et al. WO 99/38168 on pages 6-8 as this is considered conventional to provide this information to the readout/recording system. The position of the examiner is that the optimum or maximum recording linear velocities are provided in the lead in area and that the media operating in the range of 6.8 to 12 m/s would inherently have uppermost recrystallization velocities in the 12-24 m/s range for at least some specific conditions of laser power and wavelength.

The previous rejections had relied upon references which used slower responding media. The applicant argues that 16X, 20X and 24X recording velocities, but the specification also teaches example 2, which has a dislocation velocity of 14.4 m/s and a maximum recording velocity of 8.44 m/s. Furthermore the claims fail to specify the conditions for the determination of the uppermost recrystallization velocity. Clearly this leaves the claims embracing a variety of conditions for this, which allows the rejection of the claims. This position is supported by the prepub of the instant specification at [0018] which states that the dislocation velocity is dependent upon the track pitch, laser wavelength, NA and laser power.

The applicant argues that the optimum recording velocity and recrystallization linear velocity are nearly the same. The examiner agrees that when recording and erasing data, the linear velocity is the same. The claims however refer to the "uppermost recrystallization linear velocity" and there is no evidence that the velocity used in recording is conventionally/generally the same or substantially the same as the uppermost recrystallization velocity. (note the teachings

of EP 1058249 (used at 4.8 m/s with recrystallization velocities of 5.2 to 9.9 m/s as evidenced in table 1, noting octa-speed did not result in significant readout signals). The analysis fails to appreciate that there is a difference in the absorption of the laser by the amorphous and crystalline phases. The claims would have to go further in specifying the laser power density and wavelength or all of the laser power, wavelength and the spot size to begin to be descriptive of the exposure conditions or specifying that the beam is the same as that used for recording and reproduction.

While is was said that it could be used at 4X (DVD) speed, this appears to be due to the use of a different lasers (CD 780 @ 8.44 m/s and 660nm at 14 m/s (4X). Further the language that the maximum linear velocity is preferred to be between 6.8 and 15 m/s appears to be a design choice by the user/manufacturer to ensure reliable recording/erasure. Furthermore the claims do not preclude these being the same values $V=V_r=V_h$ as these would be greater then $0.85(V_r)$ or $0.85(V_h)$ for the media operating at 12-15 m/s.

4. Claims 1-4,6-8,10,12-14,33 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. '788, in view of Ando et al. '543 and Hisotomi et al. WO 99/38168.

Yasuda et al. '788 teach in example 5, a recording medium with a pitch of 0.9 microns and operating at 10 m/s. The recording medium structure is a 20 nm Al film, a ZnS-SiO_2 layer, a SiN film. A GeTeSbN recording layer, a SiN layer, a ZnS-SiO_2 layer and a Au-Co alloy layer and the second recording laminate (31/50-32/55). The recording layer compositions ca nbe AgInSbTe recording layers and may have additives including Ga and the like (12/16-50). The recording medium substrate can be 0.3 to 1.2 mm thick, and is grooved. (15/30-46). See also

example 4, which operates at 10 m/s. (30/50-31/46). The crystallization improvement layers are disclosed including Si, SiC and the like (24/46-56).

It would have been obvious to modify the cited examples of Yasuda et al. '788 by including the various performance characteristics, such a optimum or uppermost recording velocities in the lead in area of the optical disc so that the disc is used under improper conditions as discussed by described Ando et al. '543 in column 8 and Hisotomi et al. WO 99/38168 on pages 6-8 as this is considered conventional to provide this information to the readout/recording system. The position of the examiner is that the optimum or maximum recording linear velocities are provided in the lead in area and that the media operating at 10 m/s would inherently have uppermost recrystallization velocities in the 12-24 m/s range for at least some specific conditions of laser power and wavelength.

The argument that the uppermost recrystallization linear velocity is less then 12 m/s is unsupported by factual evidence. The position of the examiner is discussed above, that the claims however refer to the "uppermost recrystallization linear velocity" and there is no evidence that the velocity used in recording is conventionally/generally the same or substantially the same as the uppermost recrystallization velocity, noting that the use of 10 m/s is disclosed. (note the teachings of EP 1058249 (used at 4.8 m/s with recrystallization velocities of 5.2 to 9.9 m/s as evidenced in table 1, noting octa-speed did not result in significant readout signals). The analysis fails to appreciate that there is a difference in the absorption of the laser by the amorphous and crystalline phases. The claims would have to go further in specifying the laser power density and wavelength or all of the laser power,wavelgnth and the spot size to begin to be descriptive of

the exposure conditions or specifying that the beams is the same as that used for recording and reproduction.

5. Claims 1-4,6-8,10,12-14,33 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. '135, in view of Ando et al. '543 and Hisotomi et al. WO 99/38168.

Uno et al. '135 teach in example 1, a recording medium with a pitch of 1.20 microns, groove widths of 0.6 microns, operating at 12 m/s. The recording medium structure is Au layer, a ZnS-SiO_2 layer, a SiC-SiN layer, a GeTeSb recording layer, a SiC-SiN layer (13-21-14/51). Useful optical recording layers include GeSbTe, AgInSbTe, and the like (8/7-40). Media 1,8 and 11 in tables 1 and 2 have the best performance at 12 m/s.

It would have been obvious to modify the cited examples of Yasuda et al. '788 by including the various performance characteristics, such a optimum or uppermost recroding velocities in the lead in area of the optical disc so that the disc is used under improper conditions as discussed by described Ando et al. '543 in column 8 and Hisotomi et al. WO 99/38168 on pages 6-8 as this is considered conventional to provide this information to the readout/recording system. The position of the examiner is that the optimum or maximum recording linear velocities are provided in the lead in area and that the media operating at 12 m/s would inherently have uppermost recrystallization velocities in the 12-24 m/s range for at least some specific conditions of laser power and wavelength.

The argument that the uppermost recrystallization linear velocity is less then 12 m/s is unsupported by factual evidence. The position of the examiner is discussed above, that the claims however refer to the "uppermost recrystallization linear velocity" and there is no evidence that the velocity used in recording is conventionally/generally the same or substantially the same

as the uppermost recrystallization velocity, noting that the use of 12 m/s is disclosed. (note the teachings of EP 1058249 (used at 4.8 m/s with recrystallization velocities of 5.2 to 9.9 m/s as evidenced in table 1, noting octa-speed did not result in significant readout signals). The analysis fails to appreciate that there is a difference in the absorption of the laser by the amorphous and crystalline phases. The claims would have to go further in specifying the laser power density and wavelength or all of the laser power, wavelength and the spot size to begin to be descriptive of the exposure conditions or specifying that the beams is the same as that used for recording and reproduction. Furthermore the claims do not preclude these being the same values $V=V_r=V_h$ as these would be greater then $0.85(V_r)$ or $0.85(V_h)$.

6. Claims 1-4,6-10,12-14,17-25 and 27-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. '788 or Uno et al. '135, in view of Ando et al. '543 and Hisotomi et al. WO 99/38168, further in view of Nobukuni et al. EP 1056077.

Nobukuni et al. EP 1056077 in example 9 has a polycarbonate substrate, 100 nm ZnS-SiO_2 layer, a 20 nm recording $Ga_5Ge_5Sb_{68}Te_{22}$ layer, a 40 nm ZnS-SiO_2 layer, a 250 nm reflective layer and a protective layer which is embraced by the language of claim 27 and is used at 10X recording velocties (~12 m/s). [0464]. The addition of various materials including In, Ga, Si, Sn, Pb, Pd, Pt, Zn, Au, Ag, Zr, Hf, V, Nb, Ta, Cr, Co, Bi, N,O,S and rare earths as impurities to improve the performance and the reliability of the recording layer is disclosed [0073-0074]. Groove depths can be 30-45 nm. [0149]. The groove widths can be 0.4-0.6 microns [0153]. Example/embodiment 5 teaches a $In_8Ag_5Sb_{68}Te_{22}$ recording layer.

To address other embodiment bounded by the claims, but not rendered obvious above, the examiner cites Nobukuni et al. EP 1056077 and holds that it would have been obvious to

modify the media resulting from the combination of (Yasuda et al. '788 or Uno et al. '135), Ando et al. '543 and Hisotomi et al. WO 99/38168 by using other recording medium compositions and/or substrate thicknesses such as those disclosed by Nobukuni et al. EP 1056077, based upon the similar disclosures within Yasuda et al. '788. Further it would have been obvious to use other track widths and depths disclosed by Nobukuni et al. EP 1056077 with the smaller track pitches taught by Yasuda et al. '788 to increase the information content while maintaining a reasonable expectation of success of forming a useful optical recording medium based upon the disclosure of utility within Nobukuni et al. EP 1056077.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/
Primary Examiner, Art Unit 1795

Martin J Angebranndt
Primary Examiner
Art Unit 1795

4/23/2008